

REMARKS

The present application was filed on July 31, 2000 with claims 1 -49. Claims 18-25, 44 and 49 were canceled in prior amendments. Claims 1-17, 26-43 and 45-48 remain pending, with claims 1, 14, 26, 38, 45 and 48 being the independent claims.

Claims 14-17, 26, 28, 38, 39 and 41-43 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,959,989 (hereinafter "Gleeson").

Claims 1-13, 27, 29-37 and 40 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gleeson in view of U.S. Patent No. 5,898,686 (hereinafter "Virgile").

Claims 45-47 are rejected under §103(a) as being unpatentable over Gleeson.

Claim 48 is rejected under §103(a) as being unpatentable over Gleeson, Virgile and U.S. Patent No. 6,625,658 (hereinafter "Oguchi").

In this response, Applicants traverse the §102(e) and §103(a) rejections. Applicants respectfully request reconsideration of the application in view of the remarks below.

With regard to the §102(e) rejection, the Manual of Patent Examining Procedure (MPEP), Eight Edition, August 2001, §2131, specifies that a given claim is anticipated "only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, MPEP §2131 indicates that the cited reference must show the "identical invention . . . in as complete detail as is contained in the . . . claim," citing Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed Cir. 1989). Applicants submit that the Examiner has failed to establish anticipation of at least independent claims 14, 26 and 38 by the Gleeson reference.

Independent claim 14 is directed to a method of forwarding multicast packets by a layer-3 switch, and includes the steps of receiving a multicast packet by the switch through a first physical port on a first VLAN, and routing the multicast packet in layer-3 out a second physical port of the switch, on the first VLAN. The claim further specifies that the multicast packet is bridged in layer-2 through a third physical port of the layer-3 switch.

The Examiner argues that the limitations of claim 14 are met by intermediate device 221 of FIG. 2A in Gleeson. Applicants respectfully disagree. The intermediate device 221 of FIG. 2A is described in column 7, line 56, of Gleeson as "a switch or hub" generally, and not as a layer-3

switch as claimed. Moreover, there is no disclosure in Gleeson to the effect that the multicast packet is bridged in layer-2 through a third physical port of a layer-3 switch.

In formulating the § 102(e) rejection of claim 14, the Examiner argues that ports 4, 3 and 2 of intermediate device 221 of FIG. 2A in Gleeson correspond to the claimed first, second and third physical ports, respectively, of the layer-3 switch. However, Gleeson does not disclose or suggest the bridging of a multicast packet in layer-2 through port 2 of device 221. In fact, there is no mention whatsoever of layer-2 bridging in Gleeson. It is interesting to note that the Examiner relies on the teachings in column 12, lines 25-27, of Gleeson as allegedly supporting the layer-3 routing of a multicast packet, but is unable to cite any specific portion of Gleeson which teaches or suggests the claimed layer-2 bridging.

Thus, the relied-upon portions of Gleeson fail to meet the limitations of claim 14.

Independent claim 26 is directed to a switch comprising a plurality of ports, a layer-2 bridging unit which bridges packets between the ports responsive to their destination MAC address and their VLAN, and a multicast detector which identifies a group of at least some of the IP multicast routing related packets received by the switch, the group including IGMP queries, and prevents the layer-2 bridging unit from bridging the identified packets at least through ports which do not lead to at least one neighboring layer-3 switch or router.

The Examiner argues that these limitations are met by the intermediate device 221 shown in FIG. 2A of Gleeson. However, there is no teaching or suggestion in Gleeson to the effect that the intermediate device 221 comprises a layer-2 bridging unit and a multicast detector which operate in the particular manner recited in the claim. Gleeson actually teaches away from such an arrangement by disclosing the use of multicast controller 306 which is separate from the intermediate device 221.

Independent claim 38 is directed to a layer-3 switch, comprising at least one VLAN interface which does not have an associated IP router interface, and a layer-3 output unit which directs IP packets with a MAC source address of the switch through the at least one VLAN interface. The claim further specifies that the layer-3 output unit directs packets through the at least one VLAN interface, with an IP source address associated with a different VLAN interface of the switch.

The Examiner argues that the limitations of claim 38 are met by the multicast network device (MND) 226 of Gleeson FIG. 2A. However, the relied-upon teachings, in column 12, lines

36-44, of Gleeson, fail to describe a layer-3 output unit which directs packets in the particular manner set forth in the claim. Accordingly, it is believed that claim 38 is not anticipated by Gleeson.

With regard to the §103(a) rejections, Applicants note that a proper *prima facie* case of obviousness requires that the cited references when combined must teach or suggest all the claim limitations, and that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references or to modify the reference teachings. See Manual of Patent Examining Procedure (MPEP), Eighth Edition, August 2001, §706.02(j).

Applicants submit that the Examiner has failed to establish proper *prima facie* cases of obviousness in the §103(a) rejections of claims 1-13, 27, 29-37, 40 and 45-49, in that the cited references, even if assumed to be combinable, fail to teach or suggest all the claim limitations, and in that no cogent motivation has been identified for combining the references or modifying the reference teachings to reach the claimed invention.

Independent claim 1 is directed to a method of determining local multicast information of a local area network (LAN), and includes the steps of dividing the LAN to a number of segments larger than the number of virtual LANs (VLANs) in the network, and creating a layer-3 multicast routing table, which relates to each of the segments separately.

The Examiner in formulating the §103(a) rejection acknowledges that Gleeson fails to disclose the claimed multicast routing table which relates to individual segments of a divided LAN as claimed, but argues that the multicast forwarding table in FIG. 4 of Virgile supplies the missing teachings. Applicants respectfully disagree. The FIG. 4 multicast forwarding table in Virgile does not relate separately to each of the segments of a divided LAN as claimed. Instead, the entries of the Virgile forwarding table correspond to different multicast groups. For example, table entry 230 “corresponds to the multicast group for an audio-video teleconference which has the address AV1 stored in the multicast destination address index field 232” (Virgile, column 8, lines 2-6). Thus, the multicast forwarding table relied on by the Examiner fails to relate separately to each of the segments of a particular LAN. The combined teachings of Gleeson and Virgile therefore fail to meet each and every limitation of independent claim 1.

Also, as indicated previously, the Examiner has failed to identify a cogent motivation for combining the Gleeson and Virgile references or modifying the reference teachings to reach the claimed invention.

The Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination “must be based on objective evidence of record” and that “this precedent has been reinforced in myriad decisions, and cannot be dispensed with.” In re Sang-Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002). Moreover, the Federal Circuit has stated that “conclusory statements” by an examiner fail to adequately address the factual question of motivation, which is material to patentability and cannot be resolved “on subjective belief and unknown authority.” Id. at 1343-1344. There has been no showing in the present § 103(a) rejection of objective evidence of record that would motivate one skilled in the art to combine the Gleeson and Virgile references to produce the particular limitations in question.

Instead, the Examiner states as follows in the Office Action at page 6, regarding independent claim 1 and the proposed combination of the Gleeson and Virgile references, with emphasis supplied:

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the multicasting table of the LAN segments of Virgile in the intermediate devices of Gleeson. One of ordinary skill in the art would have been motivated to do so in order to only transmits [sic] on network segments on routes to hosts that are members of the corresponding multicast groups, thereby, reducing traffic flow and bandwidth as taught by Gleeson (See column 5, lines 27-40). An added benefit of doing so would result in reduced network congestion and costs due to decreased network traffic.

Applicants submit that this statement is a subjective and conclusory statement of obviousness, and insufficient to support the proposed combination of the reference teachings. It appears to recite advantages of the claimed invention as motivation for the proposed combination, which is improper. Also, as indicated previously, the multicast forwarding table in FIG. 4 of Virgile, relied on by the Examiner, does not relate separately to segments of a divided LAN, and thus actually represents a teaching away from the claimed invention.

It therefore appears that the Examiner in formulating the §103(a) rejection of independent claim 1 over Gleeson and Virgile has undertaken a piecemeal reconstruction of the claimed invention based upon impermissible hindsight, given the benefit of the disclosure provided by Applicants.

Independent claim 45 is directed to a method of forwarding packets, and includes the steps of receiving a packet with a source MAC address and a TTL value, changing the source MAC address of the received packet, and forwarding the packet with the changed MAC address but with the same TTL value.

The Examiner in rejecting claim 45 under §103(a) over Gleeson argues that the limitations are shown in column 12, line 40, column 13, lines 50-52, and in the frames 402a of FIG. 4A and 610 of FIG. 6. Applicants respectfully disagree. Gleeson at column 13, lines 50-52, states as follows:

The controller 306 may perform conventional routing functions to the IP header field 404, such as decrementing a time-to-live (TTL) value (not shown).

The Examiner characterizes this teaching as allegedly disclosing the forwarding of a packet with a changed MAC address but with the same TTL value as claimed. However, the relied-upon passage does not imply that a packet will be forwarded without decrementing its TTL value. Instead, it simply states that the performance of conventional routing functions is optional. This is because the “may” in the relied-upon passage applies to the performance of conventional routing functions. Once a decision is made to configure the controller 306 to perform a conventional routing function, such as decrementing the TTL value, it will apparently always decrement that value, as would be expected in accordance with conventional practice. The relied-upon teachings thus not only fail to meet the limitations in question, but actively teach away from them. Independent claim 45 is therefore not obvious in view of Gleeson.

Independent claim 48 is directed to a switch comprising a plurality of ports, a layer-3 multicast routing table, which identifies interfaces to which multicast packets should be routed according to both a VLAN and a port, and a multicast routing unit which routes multicast packets between the ports of the switch based on entries of the multicast routing table. The claim further recites that the layer-3 multicast routing table may operate in a first mode in which interfaces are

identified by both a VLAN and a port or in a second mode in which interfaces are identified only by a VLAN.

The Examiner in rejecting claim 48 relies on FIG. 2A of Gleeson and the multicast forwarding table 200 in FIG. 4 of Virgile. These particular teachings have been addressed above, and are similarly deficient as applied to the limitations of claim 48. The Examiner, apparently acknowledging these deficiencies, argues that Oguchi in FIGS. 4 and 5 and column 9, lines 18-19, supplies the missing teachings. However, the relied-upon portions of Oguchi fail to supplement the fundamental deficiencies of the proposed combination of Gleeson and Virgile. The mere mention of a "point-to-point type interface" in Oguchi does not disclose or suggest the claimed operation in first or second modes. Thus, the collective teachings of the cited references fail to particular type of multiple mode operation recited in claim 48. Moreover, the alleged motivation for combining or modifying Gleeson, Virgile and Oguchi, as set forth on page 12 of the Office Action, is subjective and conclusory, and fails to establish a *prima facie* case.

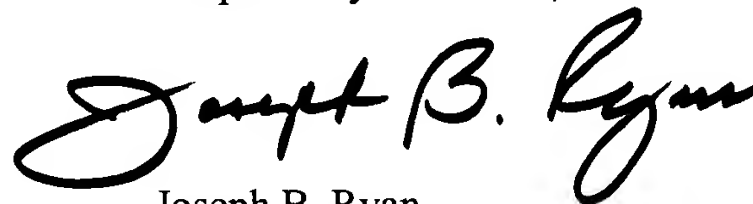
The remaining dependent claims are believed allowable for at least the reasons identified above with regard to their respective independent claims.

Moreover, one or more of these dependent claims are believed to define additional separately-patentable subject matter relative to Gleeson, Virgile, Oguchi and the other prior art of record.

In view of the foregoing, Applicants respectfully submit that the claims are in condition for allowance, and request withdrawal of the §102(e) and §103(a) rejections.

As indicated previously, a Notice of Appeal is submitted concurrently herewith.

Respectfully submitted,



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Enclosure(s): Notice of Appeal